

What we claim is:

1. A timing pulse generation method comprising:

a mask step of masking a frame pulse of a corresponding system when an alarm signal of either a working system or a protection system is received;

a selection step of selecting the frame pulse after the mask step by a switching signal; and

a monitoring window generation step of generating a monitoring window which indicates an absorbable range of delay time difference between the frame pulses around the frame pulse selected by the switching signal, of generating a read timing pulse common to memories of both systems at a predetermined timing position, and of regenerating the monitoring window when the selected frame pulse deviates from the monitoring window.

2. A timing pulse generation method comprising:

a selection step of selecting a frame pulse of either a working system or a protection system by a switching signal;

a monitoring window request step of selecting an alarm signal of a system not selected by the switching signal when an alarm signal of either the working system or the protection system is received, and of outputting a request signal for generating a monitoring window which indicates an absorbable range of delay time difference between the frame pulses upon an arrival of the frame pulse of the system selected by the switching signal, when the alarm signal of a system not selected is generated after a maximum delay time from selecting the switching signal to transferring the frame pulse; and

a monitoring window generation step of generating the monitoring window around the selected frame pulse when the monitoring window generation request signal is received, of generating a read timing pulse common to memories of both systems at a predetermined timing position, and of regenerating the

monitoring window when the selected frame pulse deviates from the monitoring window.

3. A timing pulse generation method comprising:

a selection step of selecting a frame pulse of either a working system or a protection system by a switching signal;

a monitoring window request step of selecting each slip signal from an ES memory for clock change of either the working system or the protection system by the switching signal, and of providing a request signal for generating a monitoring window which indicates an absorbable range of delay time difference between the frame pulses upon an arrival of the frame pulse of the system selected by the switching signal, when the slip signal is generated after a maximum delay time from selecting the switching signal to transferring the frame pulse; and

a monitoring window generation step of generating the monitoring window around the frame pulse selected by the switching signal when the monitoring window generation request signal is received, of generating a read timing pulse common to memories of both systems at a predetermined timing position, and of regenerating the monitoring window when the selected frame pulse deviates from the monitoring window.

4. A timing pulse generation method comprising:

a selection step of selecting a reference timing pulse of either a working system or a protection system by a switching signal, a

monitoring window generation step of generating a monitoring window which indicates an absorbable range of delay time difference between the reference timing pulses around the reference timing pulse selected by the switching signal, of generating a master timing pulse at a predetermined timing position, and of regenerating the monitoring window when the selected reference timing pulse deviates from the monitoring window, a correction signal generation step of

generating a correction signal including a number and a direction of bits when a reference timing pulse not selected deviates from the monitoring window, and a frame generation step of inserting the correction signal into an overhead of a main signal to be outputted;

5 and

an extraction step of extracting the correction signal from the main signal received, and a reference timing pulse generation step of correcting a position of the reference timing pulse of the protection system based on the correction signal, when the protection system is presently selected.

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5. A timing pulse generation method comprising:

a selection step of selecting a reference timing pulse of either a working system or a protection system by a switching signal, a monitoring window generation step of generating a monitoring window which indicates an absorbable range of delay time difference between the reference timing pulses around the reference timing pulse selected by the switching signal, of generating a master timing pulse at a predetermined timing position, and of regenerating the monitoring window when the selected reference timing pulse deviates from the monitoring window, and a correction signal generation step of generating a correction signal including a number and a direction of bits when a reference timing pulse not selected deviates from the monitoring window;

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a step of transferring the correction signal; and

a reference timing pulse generation step of correcting a position of the reference timing pulse of the protection system based on the correction signal transferred, when the protection system is presently selected.

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6. The timing pulse generation method as claimed in claim 2 or 3, further comprising a step of generating the monitoring window generation request signal only once.

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7. A timing pulse generation circuit comprising:

a mask portion masking a frame pulse of a corresponding system when an alarm signal of either a working system or a protection system is received;

5 a selector selecting the frame pulse outputted from the mask portion by a switching signal; and

a monitoring window generator generating a monitoring window which indicates an absorbable range of delay time difference between the frame pulses around the frame pulse selected by the switching  
10 signal, generating a read timing pulse common to memories of both systems at a predetermined timing position, and regenerating the monitoring window when the selected frame pulse deviates from the monitoring window.

8. A timing pulse generation circuit comprising:

15 a selector selecting a frame pulse of either a working system or a protection system by a switching signal;

a monitoring window request portion selecting an alarm signal of a system not selected by the switching signal when an alarm signal of either the working system or the protection system is received, and  
20 outputting a request signal for generating a monitoring window which indicates an absorbable range of delay time difference between the frame pulses upon an arrival of the frame pulse of the system selected by the switching signal, when the alarm signal of a system not selected is generated after a maximum delay time from selecting the  
25 switching signal to transferring the frame pulse; and

a monitoring window generator generating the monitoring window around the frame pulse selected by the selector when the monitoring window generation request signal from the monitoring window request portion is received, generating a read timing pulse  
30 common to memories of both systems at a predetermined timing position, and regenerating the monitoring window when the selected

frame pulse deviates from the monitoring window.

9. A timing pulse generation circuit comprising:

a selector selecting a frame pulse of either a working system or a protection system by a switching signal;

5 a monitoring window request portion selecting each slip signal from an ES memory for clock change of either the working system or the protection system by the switching signal, and providing a request signal for regenerating a monitoring window which indicates an absorbable range of delay time difference between the frame pulses  
10 upon an arrival of the frame pulse of the system selected by the switching signal, when the slip signal is generated after a maximum delay time from selecting the switching signal to transferring the frame pulse; and

a monitoring window generator generating the monitoring  
15 window around the frame pulse selected by the switching signal when the monitoring window generation request signal from the monitoring window request portion is received, generating a read timing pulse common to memories of both systems at a predetermined timing position, and regenerating the monitoring window when the selected  
20 frame pulse deviates from the monitoring window.

10. A timing pulse generation circuit comprising:

an interface card having a selector selecting a reference timing pulse of either a working system or a protection system by a switching signal, a monitoring window generator generating a monitoring  
25 window which indicates an absorbable range of delay time difference between the reference timing pulses around the reference timing pulse selected by the switching signal, generating a master timing pulse at a predetermined timing position, and regenerating the monitoring window when the selected reference timing pulse deviates from the  
30 monitoring window, a correction signal generator generating a correction signal including a number and a direction of bits when a

reference timing pulse not selected deviates from the monitoring window, and a frame generator inserting the correction signal into an overhead of a main signal to be outputted; and

a common portion having an extractor extracting the correction  
5 signal from the main signal received, and a reference timing pulse generator correcting a position of the reference timing pulse of the protection system based on the correction signal to be provided to the interface card, when the protection system is presently selected.

11. A timing pulse generation circuit comprising:

10 an interface card having a selector selecting a reference timing pulse of either a working system or a protection system by a switching signal, a monitoring window generator generating a monitoring window which indicates an absorbable range of delay time difference between the reference timing pulses around the reference timing pulse  
15 selected by the switching signal, generating a master timing pulse at a predetermined timing position, and regenerating the monitoring window when the selected reference timing pulse deviates from the monitoring window, and a correction signal generator generating a correction signal including a number and a direction of bits when a  
20 reference timing pulse not selected deviates from the monitoring window;

a controller transferring the correction signal from the interface card; and

a common portion having a reference timing pulse generator  
25 correcting a position of the reference timing pulse of the protection system based on the correction signal transferred through the controller to be provided to the interface card, when the protection system is presently selected.

12. The timing pulse generation circuit as claimed in claim 9 or 10  
30 wherein the monitoring window generator generates the monitoring window generation request signal only once.